

REMARKS

Claims 16-27 are now pending in this application. Claims 16, 20, 23 and 25 have been amended by way of the present amendment. Reconsideration is respectfully requested.

In the outstanding Office Action, claims 16, 17, 20-23, 25-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,903,893 (Kleewein) in view of U.S. Patent No. 5,594,898 (Dalal); and claims 18, 19 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein and Dalal as applied to claim 16, and further in view of U.S. Patent No. 5,937,409 (Wetherbee). Reconsideration is respectfully requested.

35 U.S.C. § 103 Claim Rejections

Claims 16, 17, 20-23, 25-27 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein in view of Dalal. Reconsideration is respectfully requested.

Claims 16, 20 23 and 25 have been amended to clarify the invention. In particular, claim 16 has been amended to recite:

A database system which searches a plurality of tables in distributed databases joined by a relational database, comprising:
 one or more databases present on a network;
 one or more first servers that search the databases for real data in the plurality of tables;
 a second server containing metadata that pertains to the real data stored in the one or more databases;
 table extraction means for extracting ~~one table including~~ columns from one table of the plurality of tables that store data to be retrieved from ~~a the~~ plurality of tables;
 column exclusion means for excluding columns ~~on other~~ from other tables of the plurality of tables which store the same data to be retrieved ~~on the table extracted~~ by said table extraction means from columns to be extracted in subsequent processing; and
 table joining means for creating a virtual table by joining the columns that store data ~~to be retrieved of the tables extracted in~~ ~~turn~~ by said table extraction means without being excluded by said column exclusion means, when the processing of said table extraction means and the processing of said column exclusion means have been repeated until all the columns including data to

be retrieved are analyzed; and
wherein even when the one or more databases and first
servers that manage these databases are present on the network, all
metadata that match a retrieval request can be extracted by a search
of the second server.

Claims 20, 23 and 25 have been similarly amended. Support for the amendment is provided by the original specification, figures and claims. In particular, the published application states a database system is: “built by distributing one or more databases and one or more first servers which search the databases for real data on a network.”¹ Further, **FIG. 9** below shows and the specification discloses a search engine **60** which searches data in the database **20**; the database **20** stores a plurality of real tables **21, 22, 23**; a metadata management means which manages metadata that pertain to the plurality of real tables **21, 22, 23**; a joined table generation means **65**, which is comprised of a maximum column number table extraction means **66**, selected identical data column exclusion means **67**, and table join means **68**.

Moreover, the specification discloses:

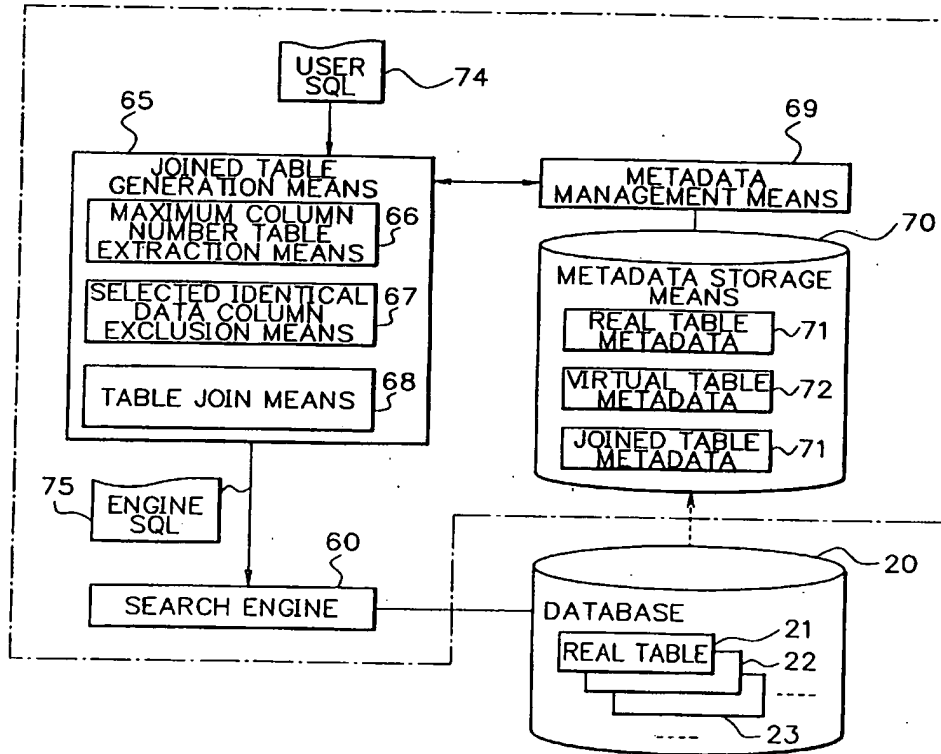
the user can obtain *information of all the different DBs 20 from the single meta DB server 40 by a single search without requiring immediate connectivity to the DBs 20 (DB servers 30).* Since the locations (URLS) of the extracted DBs 20 (DB servers 30) are contained in the metadata, which are presented to the user, the user need only know the location (URL) of the meta DB server 40. Therefore, the user need not perform any troublesome operations, e.g., for detecting and accessing all distributed DB servers 30 in turn (emphasis added).²

Thus, it is respectfully submitted that the amendments raise no questions of new matter.

¹ US 2007/0075999 at page 2, paragraph [0026].

² Id. at page 6, paragraph [0096].

FIG. 9



Kleewein discloses an improved join operation is performed between data in at least two tables, with one of the tables stored in a remote database (hereafter "remote table") and another table stored in a local database (hereafter "local table").³ In particular, Kleewein discloses a database management system (DBMS) procedure 30, as shown in FIG. 2 below, that controls merge-join procedure 36 to access data from a remotely

³ Kleewein at ABSTRACT.

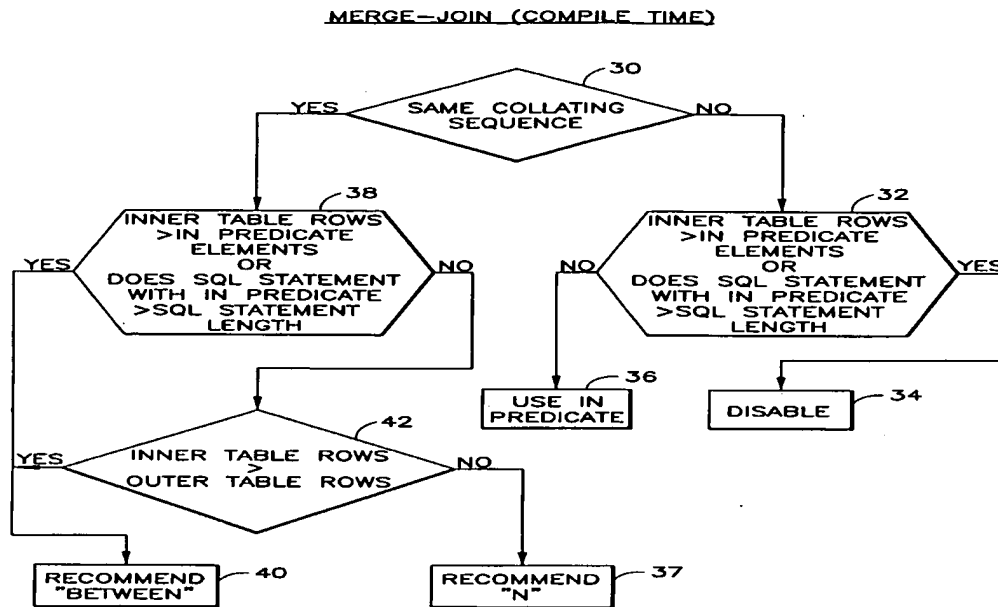


FIG. 2

stored table (i.e., an "outer" table) and the merge-join procedure 36 employs either an "IN" predicate or a "BETWEEN" predicate in an SQL statement that is issued to the outer table.⁴

However, in contrast to the claimed invention, Klewein discloses if either one or both of the tables, from which data is to be accessed, resides in a remote database, then at least one table *must* be imported to the computer where the merge-join action will occur (emphasis added).. That is, Klewein states: "the invention requires that the inner table be present in computer/server 14 in order for the invention to be implemented."

Further, in contrast to Klewein, claim 16 recites:

[A] database system which searches a plurality of tables in distributed databases joined by a relational database, comprising:
one or more databases present on a network;
one or more first servers that search the databases for real data in the plurality of tables;
a second server containing metadata that pertains to the

⁴ *Id.* at column 4, lines 31-36.

real data stored in the one or more databases;

table extraction means for extracting columns from one table of the plurality of tables that store data to be retrieved from the plurality of tables;

column exclusion means for excluding columns from other tables of the plurality of tables which store the same data to be retrieved by said table extraction means from columns to be extracted in subsequent processing; and

table joining means for creating a virtual table by joining the columns that store data extracted by said table extraction means without being excluded by said column exclusion means, when the processing of said table extraction means and the processing of said column exclusion means have been repeated until all the columns including data to be retrieved are analyzed; and

wherein even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server (emphasis added).

Claims 20, 23 and 25 have been similarly amended. That is, Kleewein does not disclose: “even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server.” In fact, Kleewan teaches away from this limitation in that it discloses if either one or both of the tables, from which data is to be accessed, resides in a remote database, then at least one table *must* be imported to the computer where the merge-join action will occur (emphasis added). That is, Kleewin states: “the invention requires that the inner table be present in computer/server 14 in order for the invention to be implemented.” Therefore, Kleewein clearly does not disclose and is substantially different from the claimed invention.

In addition, the outstanding Office Action acknowledges deficiencies of Kleewein and attempts to overcome these deficiencies by combining Dalal with Kleewein.⁵ However, Dalal cannot overcome all of the deficiencies of Kleewein, as discussed below.

Dalal disclose a method and system for efficiently joining database tables using compact row mapping structures is provided.⁶ However, as explained below, it is respectfully submitted

⁵ Outstanding Office Action at page 3, paragraph 2.

that Dalal does not disclose any technique corresponding to column exclusion means. However, in contrast to the claimed invention, Dalal nowhere discloses as claim 16 recites:

[A] database system which searches a plurality of tables in distributed databases joined by a relational database, comprising:
one or more databases present on a network;
one or more first servers that search the databases for real data in the plurality of tables;
a second server containing metadata that pertains to the real data stored in the one or more databases;
table extraction means for extracting columns from one table of the plurality of tables that store data to be retrieved from the plurality of tables;
column exclusion means for excluding columns from other tables of the plurality of tables which store the same data to be retrieved by said table extraction means from columns to be extracted in subsequent processing; and
table joining means for creating a virtual table by joining the columns that store data extracted by said table extraction means without being excluded by said column exclusion means, when the processing of said table extraction means and the processing of said column exclusion means have been repeated until all the columns including data to be retrieved are analyzed; and
wherein even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server (emphasis added).

Claims 20, 23 and 25 have been similarly amended. That is, Dalal does not disclose: “even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server.” Thus, Dalal cannot overcome all of the deficiencies of the independent claims. Therefore, it is respectfully submitted that neither Kleewein nor Dalal, whether taken alone or in combination, disclose, suggest or make obvious the claimed invention and that claims 16, 20, 23 and 25, and claims dependent thereon, patentably distinguish thereover.

⁶ Dalal at ABSTRACT.

Claims 18, 19 and 24 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Kleewein and Dalal as applied to claim 16, and further in view of Wetherbee. Reconsideration is respectfully requested.

Claims 18 and 19; and claim 24 ultimately depend upon claim 16 and claim 23, respectively. As discussed above, neither Kleewein or Dalal disclose the claimed invention of claim 16 and claim 23. Thus, at least for the same reasons, neither Kleewein or Dalal disclose the claimed invention of claims 18 and 19; and claim 24.

In addition, the outstanding Office Action acknowledges deficiencies of Kleewein and Dalal and attempts to overcome these deficiencies by combining Weatherbee with Kleewein and Dalal. However, Wetherbee cannot overcome all of the deficiencies of Kleewein and Dalal, as discussed below.

Wetherbee discloses a relational mapper supports the storage of objects from an object oriented environment in one or more relational databases.⁷ However, in contrast to the claimed invention, Wetherbee nowhere discloses: as claim 16 recites:

[A] database system which searches a plurality of tables in distributed databases joined by a relational database, comprising:
one or more databases present on a network;
one or more first servers that search the databases for real data in the plurality of tables;

a second server containing metadata that pertains to the real data stored in the one or more databases;

table extraction means for extracting columns from one table of the plurality of tables that store data to be retrieved from the plurality of tables;

column exclusion means for excluding columns from other tables of the plurality of tables which store the same data to be retrieved by said table extraction means from columns to be extracted in subsequent processing; and

table joining means for creating a virtual table by joining the columns that store data extracted by said table extraction means without being excluded by said column exclusion means, when the processing of said table extraction means and the processing of

⁷ Wetherbee at ABSTRACT.

said column exclusion means have been repeated until all the columns including data to be retrieved are analyzed; and
wherein even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server (emphasis added).

Claim 23 has been similarly amended. That is, Wetherbee does not disclose: “even when the one or more databases and first servers that manage these databases are present on the network, all metadata that match a retrieval request can be extracted by a search of the second server.” Thus, Wetherbee cannot overcome all of the deficiencies of the independent claims. Therefore, it is respectfully submitted that none of Kleewein, Dalal or Wetherbee, whether taken alone or in combination, disclose, suggest or make obvious the claimed invention and that claims 16 and 23 and 25, and claims dependent thereon, patentably distinguish thereover.

Conclusion

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 22-0185, under Order No. 21776-00033-US2 from which the undersigned is authorized to draw.

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Respectfully submitted,

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